

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Status of the claims

Claims 1-20 were pending in the subject application, of which claims 15-20 have been withdrawn from consideration by the Examiner. With this Response, claims 2-3, 6, and 15-20 have been canceled, while claims 1, 5 and 7 have been amended. No new claims have been introduced.

Sole independent claim 1 has been amended to recite an alkalifying residence time “between 1 second and 15 minutes or above 8 hours.” Support for this amendment may be found on page 2, lines 19 – 21 and 29 – 30 and in original claims 4 and 6 of the application as originally filed (WO 2004/038032). The claims have also been amended to define “alkaline residence time” as “the time between increasing the pH to above 10 and separating the biomass flocs.” Support for this amendment may be found at page 2, lines 23 – 25 of the same document. Hence, no new matter has been added with these amendments.

Claim rejections

Claims 1-7 and 10-14 are rejected under 35 USC 102(e) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over USP No. 5,453,365 to Sterzel *et al.* (“the ‘365 patent”) for the reasons of record. Claims 1-9 are rejected over WO 98/58072 to Hughes *et al.* Applicants respectfully traverse these rejections for the reasons below.

The ‘365 patent discloses a process for the preparation of lactic acid by fermentation. The fermentation broth is neutralised by first adding an alkaline compound, *i.e.* an alkaline earth metal carbonate or an alkaline earth metal bicarbonate. Subsequently, the pH of the resulting mixture is adjusted to 7 – 13, preferably to 8.0 –

9.5, by the addition of ammonia and carbon dioxide. According to the first example (column 5, lines 3 – 46), the pH of the fermentation broth is kept constant by the addition of lime (calcium carbonate), and subsequently, “*over a period of 40 minutes,*” ammonia and carbon dioxide are added (column 5, lines 31 – 34) to alkalify the mixture to a pH of 9.4, which eventually decreases to 8.2. Other than the time period recited in the Example, the ‘365 patent is silent with respect to a “residence time” for “process step (b),” as defined in the same patent.

By contrast, the claimed invention, as currently amended, recites that a “the fermentation broth is subjected to an *alkaline* residence time of between 1 second to 15 minutes or above 8 hours.” (Emphasis added.) This recitation is nowhere taught or suggested by the ‘365 patent and therefore the same reference cannot support a rejection for want of novelty.

The Examiner states that the ‘365 patent teaches residence times for controlling the fermentation reaction of 2-20 hours (col. 3, lines 16-18), “whereby ammonia is added to adjust the pH 7-13.” Applicants respectfully disagree. The “residence time” that the ‘365 patent refers to is solely to the time of fermentation, not addition of ammonia, as alleged. Indeed, a careful reading of the entire paragraph—dedicated to the describing fermentation “step (a)”—provides the appropriate context:

In process step a) the resultant lactic acid is pH controlled by pumping in an aqueous mash of calcium carbonate and/or magnesium carbonate or a mash of the bicarbonates so as to neutralize the acid to an extent of at least 90 mol %, preferably 95 mol %. During fermentation, the pH is kept constant at preferably 4 to 6, in particular at 5.5. Following an adequate residence time of from 2 to 20 h the fermentation liquor is withdrawn from the fermenter and is passed, without applying or removing heat, to the first ester interchange stage (2), i.e. to the process step b). (Emphasis added.)

Indeed, during the “residence time” taught in the ‘365 patent, “the pH is kept constant, at preferably 4 to 6, in particular at 5.5.” Solely in the interest of clarity, applicants have amended the claims to define “*alkaline* residence time” as “the time

between increasing the *pH to above 10* and separating the biomass flocs.” (Emphasis added.)

According to the ‘365 patent, alkalifying takes place in “process step (b).” Column 2, paragraph 2. Further evidence that the “2 to 20 hour” residence time does *not* refer to step (b) may be inferred from the fact that the quoted paragraph ends by teaching that the broth following the 2 - 20 hour residence time is subsequently “*passed*” to process step (b).

The remaining reference cited, WO 98/58072, does *not* relate to a process for the preparation of organic acids from sugars by fermentation, which is known by one of ordinary skill in the art to lead to the formation of different side products and impurities, and hence, different problems and solutions associated therewith. In any event, the process according to WO 98/58072 does not include an alkalifying step, let alone one requiring that the alkalified fermentation broth is “subjected to an alkaline residence time of between 1 second to 15 minutes or above 8 hours.”

For at least these reasons, neither of the references, alone or in combination, anticipates or renders the claimed invention obvious. Hence, withdrawal of same rejections is respectfully requested.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By

A handwritten signature in black ink, appearing to read "G. Villacorta", written over a horizontal line.

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